MMAC® SmartSWITCH

7C03 MMAC SmartSWITCH™ Installation Guide

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The Complete Networking Solution™

NOTICE

Cabletron Systems reserves the right to make changes in specifications and other information contained in this document without prior notice. The reader should in all cases consult Cabletron Systems to determine whether any such changes have been made.

The hardware, firmware, or software described in this manual is subject to change without notice.

In no event shall Cabletron Systems be liable for any incidental, indirect, special, or consequential damages whatsoever (including but not limited to lost profits) arising out of or related to this manual or the information contained in it, even if Cabletron Systems has been advised of, known, or should have known, the possibility of such damages.

FCC NOTICE

This device complies with Part 15 of the FCC rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

NOTE: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment uses, generates, and can radiate radio frequency energy and if not installed in accordance with the operator's manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause interference in which case the user will be required to correct the interference at his own expense.

WARNING: Changes or modifications made to this device which are not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

DOC NOTICE

This digital apparatus does not exceed the Class A limits for radio noise emissions from digital apparatus set out in the Radio Interference Regulations of the Canadian Department of Communications.

Le présent appareil numérique n'émet pas de bruits radioélectriques dépassant les limites applicables aux appareils numériques de la class A prescrites dans le Règlement sur le brouillage radioélectrique édicté par le ministère des Communications du Canada.

VCCI NOTICE

This equipment is in the 1st Class Category (information equipment to be used in commercial and/or industrial areas) and conforms to the standards set by the Voluntary Control Council for Interference (VCCI) by Information Technology Equipment aimed at preventing radio interference in commercial and/or industrial areas.

Consequently, when used in a residential area or in an adjacent area thereto, radio interference may be caused to radios and TV receivers, etc.

Read the instructions for correct handling.

　この装置は、第一種情報装置（商工業地域において使用されるべき情報装置）で商工業地域での電波障害防止を目的とした情報処理装置等電波障害自主規制協議会（VCCI）基準に適合しております。
　従って、住宅地域またはその隣接した地域で使用すると、ラジオ、テレビジョン受信機等に受信障害を与えることがあります。
　取扱説明書に従って正しい取り扱いをして下さい。

DECLARATION OF CONFORMITY

Application of Council Directive(s):	**89/336/EEC** **73/23/EEC**
Manufacturer's Name:	**Cabletron Systems, Inc.**
Manufacturer's Address:	**35 Industrial Way** **PO Box 5005** **Rochester, NH 03886-5005**
European Representative Name:	**Mr. J. Solari**
European Representative Address:	**Cabletron Systems Limited** **Nexus House, Newbury Business Park** **London Road, Newbury** **Berkshire RG13 2PZ, England**
Conformance to Directive(s)/Product Standards:	**EC Directive 89/336/EEC** **EC Directive 73/23/EEC** **EN55022** **EN 50082-1** **EN 60950**
Equipment Type/Environment:	**Networking Equipment, for use in a** **Commercial or Light Industrial** **Environment.**

We the undersigned, hereby declare that the equipment packaged with this notice conforms to the above directives.

Manufacturer	Legal Representative in Europe
Mr. Richard Michaud	Mr. J. Solari
Full Name	Full Name
Manager of Engineering Services	Managing Director - E.M.E.A.
Title	Title
Rochester, NH, USA	Newbury, Berkshire, England
Location	Location

CONTENTS

CHAPTER 1 INTRODUCTION

CHAPTER 2 INSTALLATION

CHAPTER 3 TECHNICAL SPECIFICATIONS

CHAPTER 1

INTRODUCTION

Welcome to Cabletron Systems *7C03 MMAC SmartSwitch Installation Guide*. This manual is a simple installation and reference guide. The 7C03 MMAC SmartSwitch is a unique self-contained module that can be placed into an MMAC series chassis[1].

1.1 USING THIS MANUAL

Chapter 1, **Introduction**, discusses the features of the 7C03 MMAC SmartSwitch.

Chapter 2, **Installation**, explains the process of inserting the 7C03 MMAC SmartSwitch in an MMAC chassis.

Chapter 3, **Technical Specifications**, explains the physical and operational specifications for the 7C03 MMAC SmartSwitch.

1.2 USING THE SMARTSWITCH MANUAL SET

Each SmartSwitch interface module that can be inserted in the 7C03 MMAC SmartSwitch is shipped with a module user's guide. For example, the *7E03-24 Ethernet SmartSwitch Interface Module User's Guide* explains the physical characteristics, specifications, and installation procedures of the 7E03-24 Module.

The management module of the 7C03 MMAC SmartSwitch is described in the *7X00 SmartSwitch Controller Module User's Guide.* The user's guide explains the 7X00 Module's physical characteristics, installation procedures, and how to locally manage the SmartSwitch interface modules in the chassis.

[1.] Refer to Chapter 2 of this installation guide for information and considerations regarding the placement of a 7C03 MMAC SmartSwitch in an MMAC series chassis.

In addition, any local management information that is specific to a particular SmartSwitch interface module is described in a module specific local management appendix. For example, the *7E03-24 Ethernet SmartSwitch Interface Module Local Management Appendix* explains information that is specific to local management of the 7E03-24 Module only.

1.3 7C03 MMAC SMARTSWITCH OVERVIEW

The 7C03 MMAC SmartSwitch (Figure 1-1) is a metal enclosure that can be placed into two module slots of an MMAC chassis. The 7C03 MMAC SmartSwitch attaches to the MMAC chassis' power bus, but does not attach to the data channels on the chassis' backplane. The 7C03 MMAC SmartSwitch can be installed or removed from the MMAC chassis at any time without affecting the operation of the rest of the network.

The 7C03 MMAC SmartSwitch has three module slots. The left-most slot (slot one) is reserved for the 7X00 SmartSwitch Controller Module, a management module that contains a Smart Switching engine. The other two slots can support any combination of Ethernet, Token Ring, FDDI, and ATM SmartSwitch interface modules.

Spanning the rear wall of the 7C03 MMAC SmartSwitch is the SmartSwitch Bus. All modules that are inserted into the 7C03 MMAC SmartSwitch connect to the SmartSwitch Bus. All communication between modules within the 7C03 MMAC SmartSwitch is achieved via the SmartSwitch Bus.

All data and management information from SmartSwitch interface modules within the 7C03 MMAC SmartSwitch is relayed along the SmartSwitch Bus to the 7X00 Module. All switching functions are performed by the 7X00 Module. Thus, within the confines of the 7C03 MMAC SmartSwitch, data can be freely transmitted regardless of front panel technology. With no external bridges or routers, the transfer of data from one point to another within the 7C03 MMAC SmartSwitch is virtually direct.
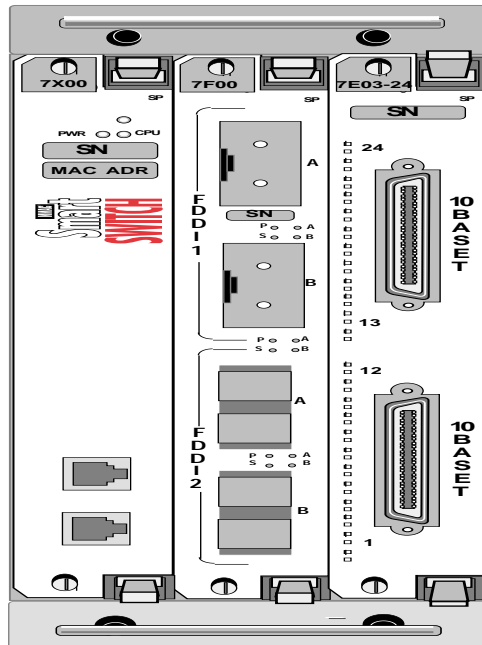
Figure 1-1. 7C03 MMAC SmartSwitch

Because the 7C03 MMAC SmartSwitch does not attach to the data channels on the backplane of an MMAC chassis, data can not be transmitted *internally* from SmartSwitch interface modules to the other modules in the MMAC chassis. However, data can be transmitted *externally* from SmartSwitch interface modules to any other destination (in the same chassis or elsewhere) via connections to the front panel of any SmartSwitch interface module.

1.3.1 7X00 SmartSwitch Controller Module

The 7X00 SmartSwitch Controller Module is the only processing and management element in the 7C03 MMAC SmartSwitch. The 7X00 Module has no front panel data ports. All data enters and exits the 7X00 Module via the SmartSwitch Bus on the 7C03 MMAC SmartSwitch's backplane. The 7X00 Module directs incoming data to its intended destination by using a group of Application Specific Integrated Circuits (ASICs) collectively known as the SmartSwitch Core. All packet switching functions are performed in the module's SmartSwitch Core. The SmartSwitch Core is capable of switching up to 750,000 frames per second. The firmware on a 7X00 Module determines the SmartSwitch Core's operating mode (traditional switch or SecureFast Packet Switch). The module's CPU (an i960 microprocessor®) is used to collect management data of the SmartSwitch system.

Note: *The 7X00 Module is not hot-swappable. Because the 7X00 Module is the only processing/management module in the 7C03 MMAC SmartSwitch, removing the 7X00 Module will sever communications to all SmartSwitch interface modules in the 7C03 MMAC SmartSwitch.*

1.3.2 SmartSwitch interface modules

SmartSwitch interface modules in a 7C03 MMAC SmartSwitch communicate freely with each other via the 7C03's SmartSwitch Bus and 7X00 SmartSwitch Controller Module. SmartSwitch interface modules can be installed or removed from the 7C03 MMAC SmartSwitch at any time without impacting the rest of the network.

1.3.3 Operations

Data packets entering through the front panel of a SmartSwitch interface module in the 7C03 MMAC SmartSwitch are converted by the module's hardware into frames that have a common "canonical" format. Canonical frames are forwarded along the 7C03's SmartSwitch Bus to the 7X00 Module in slot one. The configuration of the 7X00 Module (either traditional switch or SecureFast Packet Switch) determines the manner in which canonical frames are processed.

When operating as a traditional switch (a store-and-forward switch using the 802.1d Spanning Tree protocol), the 7X00 Module's SmartSwitch searches for the canonical frame's destination address in the module's connection table. If the canonical frame's destination address is found in the connection table, the frame is forwarded to that specific destination via the 7C03's SmartSwitch Bus. If the canonical frame's destination address is not found in the connection table, the frame is flooded to all of the SmartSwitch interface modules via the 7C03's SmartSwitch Bus.

When operating as a SecureFast Packet Switch, the 7X00 Module's SmartSwitch searches for the canonical frame's destination address-source address (DA-SA) pair and receive port in the module's connection table. If the canonical frame's entry is found in the connection table, the frame is forwarded to a specific destination via the 7C03's SmartSwitch Bus. If the canonical frame's entry is not found in the connection table, a request is sent to the system's Virtual Network Services (VNS). The VNS checks its virtual routing tables and policy sections. If the frame's information appears in the VNS' virtual routing tables and the VNS' policy section contains an entry that verifies that the frame's source and the frame's destination are a valid combination, then the frame is forwarded to its destination via the 7C03's SmartSwitch Bus, and a corresponding entry is written to the receiving module's connection table. Otherwise, the frame is dropped.

1.4 RELATED MANUALS

The following manuals supplement the procedures and other technical data provided in this manual. The procedures will be referenced where appropriate, but will not be repeated.

Cabletron Systems SmartSwitch Interface Module User's Guides (module specific).

Cabletron Systems SmartSwitch Interface Module Local Management Appendices (module specific).

Cabletron Systems 7X00 SmartSwitch Controller Module User's Guide

1.5 GETTING HELP

If you need additional support with the 7C03 MMAC SmartSwitch, or if you have any questions, comments or suggestions concerning this manual, contact Cabletron Systems Technical Support:

By phone:	(603) 332-9400
By fax:	(603) 337-3075
By World Wide Web:	http://www.cabletron.com
By CompuServe®:	GO CTRON from any ! prompt
By Internet mail:	support@ctron.com
By BBS:	(603) 335-3358
By mail:	Cabletron Systems, Inc. P.O. Box 5005 Rochester, NH 03886-5005

CHAPTER 2

INSTALLATION

This chapter contains instructions for unpacking and installing the 7C03 MMAC SmartSwitch in an MMAC chassis. The 7C03 MMAC SmartSwitch can be installed in an MMAC-M5FNB or in an MMAC-M8FNB chassis.

Note: *Because of the modular nature of the power supplies and interface modules in the MMAC-M5FNB and MMAC-M8FNB chassis, there is no one standard MMAC configuration that can be used as a reference. The way you configure your MMAC-M5FNB or MMAC-M8FNB chassis (number of power supplies, number and types of interface and management modules) is determined by your specific needs. Therefore, to insure that the power requirements of your MMAC will not be exceeded by the addition of a 7C03 MMAC SmartSwitch, we recommend that you contact Cabletron Technical Support prior to installing the 7C03 MMAC SmartSwitch.*

2.1 UNPACKING THE 7C03 MMAC SMARTSWITCH

Unpack the 7C03 MMAC SmartSwitch by using the following steps:

1. Remove the 7C03 MMAC SmartSwitch from the shipping box. (Save the box and packing materials in the event the 7C03 MMAC SmartSwitch must be reshipped.)

2. Remove the 7C03 MMAC SmartSwitch from the plastic bag.

3. Examine the 7C03 MMAC SmartSwitch and check for damage. If damage exists, DO NOT install the 7C03 MMAC SmartSwitch; contact Cabletron Systems Technical Support. Otherwise, install the 7C03 (see Section 2.2).

2.2 INSTALLING THE 7C03 MMAC SMARTSWITCH

Prior to installing the 7C03 MMAC SmartSwitch, please read the note that appears on page 2-1.

To install the 7C03 MMAC SmartSwitch in an MMAC-M5FNB or MMAC-M8FNB chassis, use the following steps and refer to Figure 2-1.

1. Remove the blank panels covering the slots in which the 7C03 MMAC SmartSwitch will be installed. All other unused slots must remain covered to ensure proper air flow and cooling.

2. Hold the 7C03 MMAC SmartSwitch by the top and bottom handles and align the plastic rails on the top and bottom of the 7C03 MMAC SmartSwitch with the corresponding card guides on the MMAC chassis.

3. Slide the 7C03 MMAC SmartSwitch straight into the chassis until the 7C03 engages the backplane connectors.

4. Tighten the top and bottom thumb screws on the 7C03 MMAC SmartSwitch.

5. You can now install the 7X00 Module and SmartSwitch interface modules into the 7C03 MMAC SmartSwitch. Refer to the applicable module user's guide for detailed installation instructions.
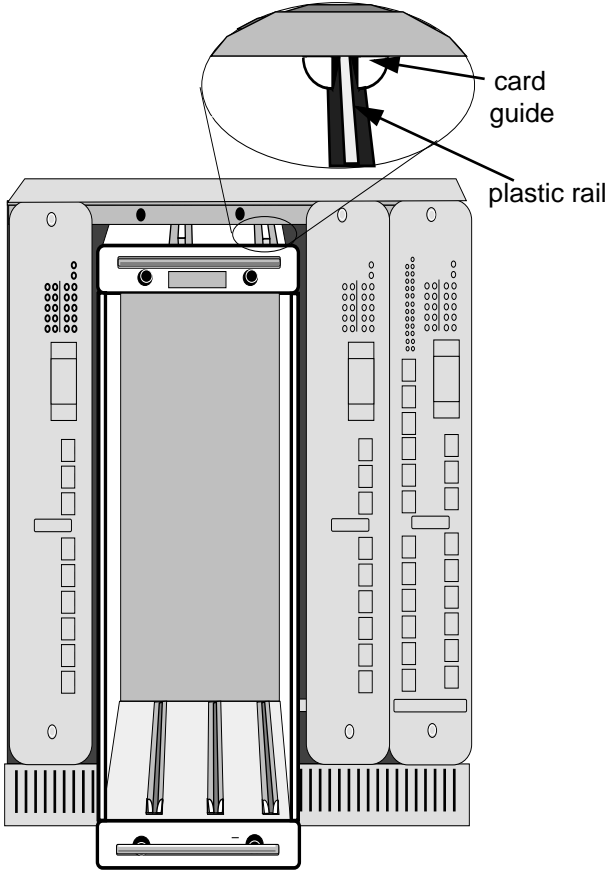
card
guide

plastic rail

Figure 2-1. Installing the 7C03 MMAC SmartSwitch in an MMAC-M8FNB

CHAPTER 3

TECHNICAL SPECIFICATIONS

This chapter includes the technical specifications for Cabletron Systems 7C03 MMAC SmartSwitch. Cabletron Systems reserves the right to change these specifications at any time without notice.

3.1 SERVICE

MTBF: >200,000 hours

MTTR: <0.5 hour

3.2 PHYSICAL

3.2.1 Dimensions

33.1D x 29.2 H x 10 W centimeters

(12.8 D x 9.0 H x 3.9 W inches)

3.2.2 Weight

Unit: <9.0 kgs. (<20 lbs.)

Shipping: <9.0 kgs. (<20 lbs.)

3.3 ENVIRONMENTAL

Operating Temperature: +5° to +40° C (+41° to +104° F)

Storage Temperature: -30° to +80° C (-22° to +160° F)

Relative Humidity: 5 to 95% (non-condensing)